September 1, 2015

NIST SST Beamline Final Design Review Meeting

Room 156, Building 745, NSLS II, Brookhaven National Laboratory

Welcome by Dan Fischer from NIST in the absence of Andrew Broadbent. Attendance List generated

09:00 Beamline Overview

a) NIST will install 2 fast valves in the beamline a couple of metres upstream of the most upstream endstation to protect the beamline optics from an unforeseen vacuum failure
b) Secondary BS raytracing must be validated by calculation – currently planned for 2016 Q1
c) 14 bar at 30 minutes FAT is acceptable for internally-cooled mirrors, L1 and M1
d) For HP NEXAFS, VS7 will be removed at the time of installation and GV8 won't be installed and a simple spool piece will installed temporarily
e) [Scott Mowat: is there a pump, gauges on VS17?]
f) Design of VS27 still in progress – pump and RA valve are supplied, but no gauging
g) The supply of GV32 and GV33 is currently not in scope of supply
h) Correct endstation label: "NEXAFS/XPS ~~μNEXAFS~~"
i) Add cooled mask upstream of DCM in Tender Branch
j) Add label to Tender Branch Pink Beam Stop
k) Cryocooler moves ~1m downstream and flip over the support column for the cryolines
l) VS15 needs to be corrected, remove extraneous FS and add bellows

10:15 Project Plan

m) Chris Stebbins joined the meeting for this item
n) NIST will install 2 fast valves in the beamline a couple of metres upstream of the most upstream endstation to protect the beamline optics from an unforeseen vacuum failure
o) Goal to get BMM M1 installed during the early part of the September 2016 shutdown, otherwise it will have to wait until December shutdown

10:30 Mirror Optics

p) Reiterated agreed changes required on DCM – cooling lines, Si[311] crystal

12:00 Lunch

Andrew Broadbent joins meeting after lunch

13:00 High Heatload Components

q) What is the heatload of the new sources – 13.8kW/mrad^2 and 6.7kW/mrad^2 in 0.5 x 0.3 mrad aperture cf 4.1kW and 4.8kW => all checked OK
r) L1 mask, check power density of 13,800W/mrad^2 against 36 W/mm^2=> all OK

13:30 Diagnostics

s) This point skipped due to lack of time

14:20 Vacuum System

t) General comments, vacuum travellers to be filled during installation by NIST personnel, careful FIP binder, second position indicators to be added by BNL people after install
u) Alternatives to VAT Series 54 RA valves which can leak following bakeout
v) Action to define length of pump and gauge cables to determine how to buy the cable through NSLS II or backfill the NSLS II cable stock…
w) Fit burst discs to L1, M1 and L2 mirror systems in the FOE, M3, PGM and DCM on the experimental hall floor. Sizing calculation has been submitted and clarification on ASME-rated unit to be completed – complete with tags attached to items
x) Label front of controllers:- IPC:1, VGC:1, etc

14:35 Control Interfaces

y) Check on lateral positioning output signals from the DCM
z) Andrew to arrange session with Johnny Kirkland for hexapod interface
aa) Johnny to review the Functional Specification and discuss further with Doug Smith

15:00 EPS

bb) Define cryocooler digital interfaces (2 outputs, 1 input…)

15:15 Utilities

cc) Add nominal and minimal flow to each circuit on the controls FS

15:30 FAT and installation

dd) Standard tests for hexapods, screens, slits, cryocooler

ee) Optics to be accepted based upon vendor reports

ff) Acceptance on radiation elements via inspection

gg) Rigging is as per top level drawings and generally acceptable

hh) Survey is as previously agreed and is currently in progress

ii) Can consider an intermediate installation to minimize effort of final installation

16:00 Radiation Safety

jj) Need lead viewports on all elements outside the FOE

kk) Ray tracing must be imported into BNL drawing format, approved by BNL Radiation Specialist and uploaded into the vault

ll) On synchrotron raytrace examine the M branch and look at the most outboard source going through BTD1, BTD2, BTD3 and fixed mask, verify they are valid rays, and then ensure that the White Beam Stop does indeed block them.

mm) On synchrotron raytrace examine the L branch and look at the most inboard source going through BTD1, BTD2, BTD3 and fixed mask, verify they are valid rays, and then ensure that the White Beam Stop does indeed block them.

16:30 Action Item List

Reference	Action	Actionee
SST-1	Produce spool piece to replace HP NEXAFS endstation (not yet completed)	AF
SST-2	Correct model to include latest changes, and update labelling	AF
SST-3	Add labels to vacuum controllers	AF
SST-4	Advise alternative RA valves	AJB
SST-5	Confirm cryocooler EPS interfaces	AF
SST-6	Update raytracing to remove effect of FE fixed mask and reissue drawings	AF
SST-7	Provide approval for build of components, including radiation components	DF
SST-8	Update water circuit table for nominal and trip	AF

	limits	
SST-9	Define actual burst discs to be used	AF
SST-10	Deliver pressure test procedure at 14 bar for NSLS II waiver of delivered components	AF
SST-11	Test all further elements at 150psi x 1.5 = 225psi for 10 minutes	AF

Post Meeting Note:-

Add provision for gold evaporation on all soft x-ray gold mesh diagnostics.

What is the aperture required for the diagnostics in the dithered regions on the M branch beamline…